IN THE CLAIMS:

Please amend the claims to read as follows:

-- 1. (currently Amended) A reactor apparatus including a support element adapted to be rotatable about an axis, the support element having a surface with a periphery and feed means associated therewith for supplying at least one reactant to the surface~~, characterized in that~~ such that, upon rotation of the surface, the reactant flows freely, solely by way of centrifugal force generated by rotation of the surface, across the surface as a thin film and is thrown from the periphery thereof, wherein the surface is substantially planar and wherein there is further provided a shear member ~~which is disposed in close proximity to the surface so as, in use,~~ formed as a peripheral basal surface of a dome or canopy or cylindrical or tubular member, the shear member being disposed in close proximity to but not mounted on the surface so as, in use, to contact the thin film only where it passes between the peripheral basal surface and the surface and not at other locations on the surface, and to impart a shearing force to the reactant on the surface when the support element is rotated.

Claims 2-12 (cancelled).

13. (previously presented) A reactor as claimed in claim 1, wherein the shear member is adjustable so as to vary its spacing from the surface of the support element.

14. (previously presented) A reactor as claimed in claim 1, wherein the shear member is held stationary during rotation of the support element.

15. (previously presented) A reactor as claimed in claim 1, wherein the shear member is adapted, in use, to rotate in an opposite direction to the support element.

16. (previously presented) A reactor as claimed in claim 1, wherein the shear member is adapted, in use, to rotate in the same direction as the support element but at a different rotational speed.

17. (previously presented) A reactor as claimed in claim 15, wherein the shear member has an axis of rotation which is offset from the axis of rotation of the support element.

18. (previously presented) A reactor as claimed in claim 1, wherein the shear member is coated or otherwise provided with a heterogeneous catalyst.

19. (previously presented) A reactor as claimed in claim 1, wherein a surface of the shear member which, in use, contacts the reactant, is substantially smooth.

20. (previously presented) A reactor as claimed in claim 1, wherein a surface of the shear member which, in use, contacts the reactant, is provided with discontinuities which enhance its surface area.

21. (previously presented) A reactor as claimed in claim 20, wherein the discontinuities comprise a mesh, grid or corrugations.

22. (previously presented) A reactor as claimed in claim 1, wherein the shear member is provided with temperature control means.

23. (previously presented) A reactor as claimed in claim 22, wherein the temperature control means is a heater or heat exchanger.

Claims 24-26 (cancelled).

27. (new) A reactor apparatus including a support element adapted to be rotatable about an axis, the support element having a surface with a periphery and feed means associated therewith for supplying at least one reactant to the surface such that, upon rotation of the surface, the reactant flows freely, solely by way of centrifugal force generated by rotation of the surface, across the surface as a thin film and is thrown from the periphery thereof, wherein the surface is formed as an interior surface of a cone shaped support element and wherein there is further provided a shear member which is disposed in close proximity to but not mounted on the surface so as, in use, to contact the thin film only where it passes between the shear member and the surface and not at other locations on the surface, and to impart a shearing force to the reactant on the surface when the support element is rotated.

28. (new) A reactor as claimed in claim 27, wherein the interior surface of the support element has a substantially circular cross-section when sectioned along a plane substantially perpendicular to the axis of rotation.

29. (new) A reactor as claimed in claim 27, wherein the shear member comprises a plug having a circumferential surface shaped such that, when the plug is mounted coaxially and at least partially within the support element, the circumferential surface contacts the reactant on

the interior surface of the support element when the reactor is in use while allowing the support element to rotate freely.

30. (new) A reactor as claimed in claim 29, wherein the plug is generally disc shaped.

31. (new) A reactor as claimed in claim 29, wherein the plug is cone, dome or canopy shaped.

32. (new) A reactor as claimed in claim 27, wherein the shear member is adjustable so as to vary its spacing from the surface of the support element.

33. (new) A reactor as claimed in claim 27, wherein the shear member is held stationary during rotation of the support element.

34. (new) A reactor as claimed in claim 27, wherein the shear member is adapted, in use, to rotate in an opposite direction to the support element.

35. (new) A reactor as claimed in claim 27, wherein the shear member is adapted, in use, to rotate in the same direction as the support element but at a different rotational speed.

36. (new) A reactor as claimed in claim 27, wherein the shear member is coated or otherwise provided with a heterogeneous catalyst.

37. (new) A reactor as claimed in claim 27, wherein a surface of the shear member which, in use, contacts the reactant, is substantially smooth.

38. (new) A reactor as claimed in claim 27, wherein a surface of the shear member which, in use, contacts the reactant, is provided with discontinuities which enhance its surface area.

39. (new) A reactor as claimed in claim 38, wherein the discontinuities comprise a mesh, grid or corrugations.

40. (new) A reactor as claimed in claim 27, wherein the shear member is provided with temperature control means.

41. (new) A reactor as claimed in claim 40, wherein the temperature control means is a heater or heat exchanger.

42. (new) A method of mixing or reacting at least one reactant using a reactor apparatus including a support element that rotates about an axis, the support element having a

surface with a periphery and feed means associated therewith for supplying the reactant to the surface, the reactor apparatus further including a shear member that is disposed in close proximity to but not mounted on the surface; wherein the shear member is disposed in close proximity only to certain predetermined parts of the surface but not to other parts of the surface, and wherein the reactant flows freely across the other parts of the surface, solely by way of centrifugal force generated by rotation of the surface, as a thin wavy film, and is thrown from the periphery thereof, and wherein the shear member contacts the thin film while it passes the certain predetermined parts of the surface and imparts a shearing force to the thin film.

43. (new) A method according to claim 42, wherein the shear member comprises a dome or canopy having a peripheral basal surface which contacts the thin film.

44. (new) A method according to claim 42, wherein the shear member comprises a cylindrical or tubular member having a peripheral basal surface which contacts the thin film.

45. (new) A method according to claim 42, wherein the surface is formed as an interior surface of a cone, dome or canopy shaped support element.

46. (new) A method according to claim 45, wherein the interior surface of the support element has a substantially circular cross-section when sectioned along a plane substantially perpendicular to the axis of rotation.

47. (new) A method according to claim 45, wherein the shear member comprises a plug having a circumferential surface shaped such that, when the plug is mounted coaxially and at least partially within the support element, the circumferential surface contacts the thin film on the interior surface of the support element while allowing the support element to rotate freely.

48. (new) A method according to claim 47, wherein the plug is generally disc shaped.

49. (new) A method according to claim 47, wherein the plug is cone, dome or canopy shaped.

50. (new) A method according to claim 42, wherein the shear member is adjustable so as to vary its spacing from the surface of the support element.

51. (new) A method according to claim 42, wherein the shear member is held stationary during rotation of the support element.

52. (new) A method according to claim 42, wherein the shear member rotates in an opposite direction to the support element.

53. (new) A method according to claim 42, wherein the shear member rotates in the same direction as the support element but at a different rotational speed.

54. (new) A method according to claim 43, wherein the shear member has an axis of rotation which is offset from the axis of rotation of the support element.

55. (new) A method according to claim 44, wherein the shear member has an axis of rotation which is offset from the axis of rotation of the support element.

56. (new) A method according to claim 42, wherein the shear member is coated or otherwise provided with a heterogeneous catalyst.

57. (new) A method according to claim 42, wherein a surface of the shear member which contacts the thin film is substantially smooth.

58. (new) A method according to claim 42, wherein a surface of the shear member which contacts the thin film is provided with discontinuities which enhance its surface area.

59. (new) A method according to claim 42, wherein a temperature of the shear member is controlled by temperature control means. - -